EcoHealth and One Health – Moving from concepts to implementation: “Learning by doing” through case studies

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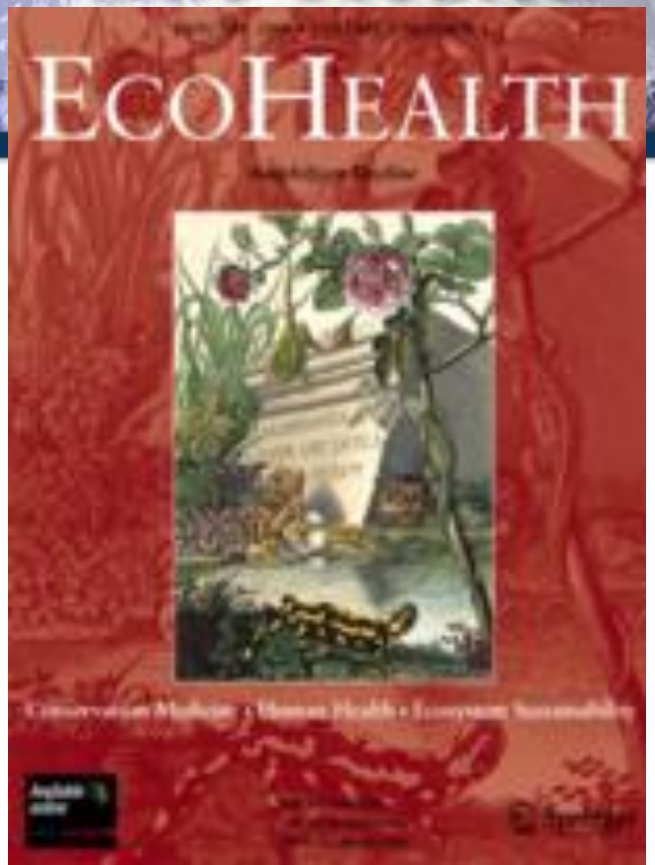
Presentation outline

- EH versus OH and their history in SE Asia (a short review)
- Case study, learning by doing
- Final reflections and conclusions

Eco Health & One Health



Eco Health and One Health - Compare

Various definitions (open to debate): range from quite rigid to very flexible!

One-Health

- biomedical focus: human + animal + wildlife
- focus on communicable diseases
- Operationalized/ institutionalized

EcoHealth:

- environment & socio-economic aspects – pioneered outside ‘traditional’ health
- communicable & non-communicable diseases (dioxin; heavy metal toxicity
- academic / research / complexity

Eco Health – One Health Contrast

Eco Health

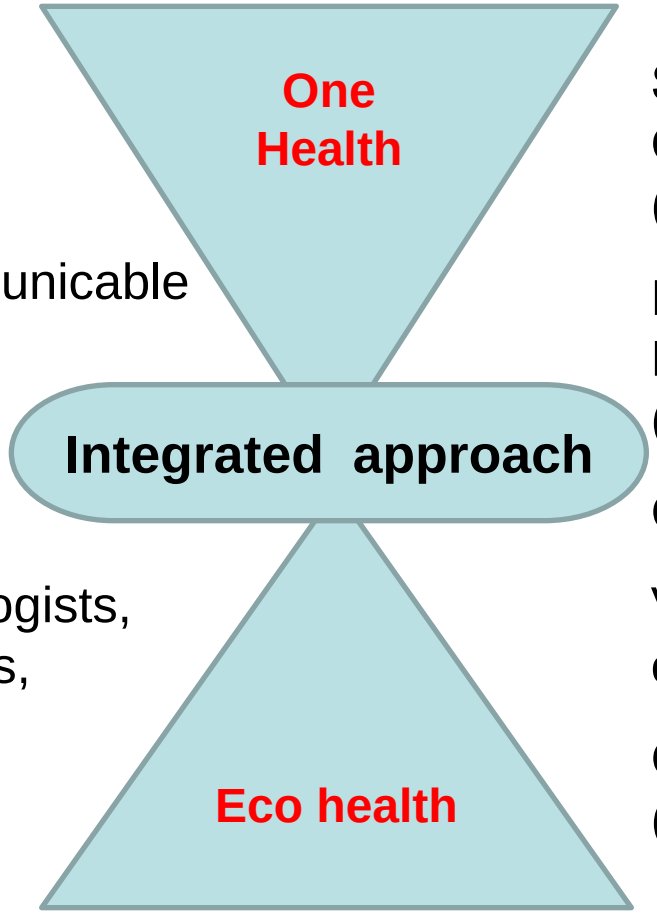
Originated in biological Ecology/land conversation

Complexity focus/systems Communicable/non communicable diseases

Pioneered from IDRC

'Bottom Up'

Vets, Medicals, epidemiologists, ecologists, social scientists, philosophers, indigenous perspectives, etc.



One Health

Schwabe's One Medicine One world/One Medicine (Zinsstag)

More quantitative/ Biometric focus (animal/human/widlllife)

Communicable diseases

Vets, medicals, some ecologist

Currently institutionalized (FAO, OIE)

Modified after IAEA 2014

OneHealth/EcoHealth in SE Asia

- One-Health
  - Various initiatives started in late 2000th in a response to HPAI International Ministerial Conference on Avian and Pandemic Influenza, New Delhi, Dec 2007, FAO, OIE, and WHO – to develop a joint strategic *One World, One Health* framework
  - IMCAPI, 2008 & 2010; Stone Mountain, 2010
  - Meanwhile much more initiatives emerged
- Eco-Health
  - Introduced by IDRC to SE Asia mid of the 2000
  - Initial approach through exiting informal researcher network
  - IDRC funded various projects: APAIR, EcoEID, FBLI, BECA and EcoZD
  - New initiatives emerged

APEIR
Asia Partnership on Emerging Infectious Diseases Research

EcoEID

- **INDOHUN**
- **THOHUN**
- **VOHUN**
- **MYOHUN**

EHRCs

BECA
Building Ecohealth Capacity in Asia

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CENPHER
TRUNG TÂM Y TẾ CÔNG CỘNG VÀ HỆ SINH THÁI
CENTER FOR PUBLIC HEALTH AND ECOSYSTEM RESEARCH

Swiss TPH

GHI

Emerging Pandemic Threats Program

PREDICT • RESPOND • PREVENT • IDENTIFY

ACIAR

GHSA

Case studies "learning by doing"

- **From previous or ongoing ILRI projects in SE Asia**
  - **ILRI EcoZD, project highlights and 2 case studies**
  - **Pig Risk (Vietnam)**
- **Com Across**
  - **Laos case study**

Ecosystem Approaches to the Better Management of Zoonotic Emerging Infectious Diseases in Southeast Asia (EcoZD)

IDRC | CRDI Canada
International Development Research Centre
Centre de recherches pour le développement international

Swiss TPH

GHGI

Veterinarians Without Borders / Vétérinaires Sans Frontières

London School of Hygiene & Tropical Medicine

RVC Royal Veterinary College University of London

EcoZD

ILRI International Livestock Research Institute

Key components

- **Appraisal & Consultative Process**
  - Outcome Mapping: demonstrate behaviour changes of targeted groups
- Innovative **Eco Health research in** all 6 countries ("learning by doing" case studies)
  - Trans-disciplinary collaboration between institutions & teams –
  - **New for most of the team members**
- Establishment of two **Eco Health Resource Centres** at Chiang Mai University (CMU) and Universitas Gadjah Mada (UGM) in Indonesia
- **Networking** with other OH, EH initiatives

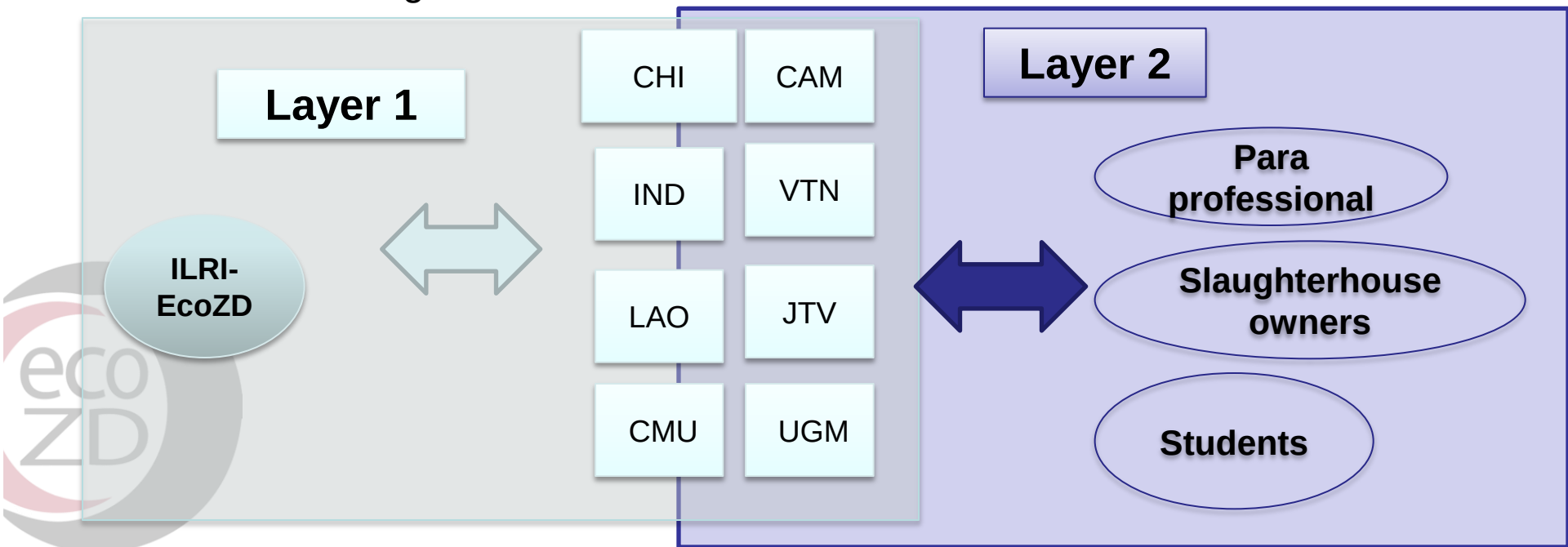
Outcome mapping as M&E tool

- An participatory planning, M&E tool
- Outcomes = changes in KAP & behavior of targeted groups

A Two-layer process

Layer 1: Relationship between EcoZD project & 8 teams to influence teams' changes in knowledge, attitude, and practices (KAP).

Layer 2: Relationship between teams & their boundary partners (BPs) to support BPs' changes in KAP.*



Eco ZD - EH story – general reflections

- **Project did not come with pre-determined research questions**, there was plenty froom for adaptation in the proposal
- ***Learning by doing*** EcoHealth approach
- Emphasis on capacity building - an approach where **teams made key research decisions** and were supported in implementation
- **Multi-year process of inter-personal relationship/trust-building**
- **Amendments** made based on own but also reflections of partners – 2 EHRC established

Challenges across all teams

- Various definitions (EcoHealth and OneHealth)
- Identification of a common research interest
- Budget sharing
- Social science vs. biometric science expertise
- Qualitative vs. quantitative research – synthesis of both
- Two-dimensional capacity-building requirement
    - Technical
    - EH concept
- EH incorporation in the case studies – reality check – often more VPH or at most OH than EH
- Policy engagement

Case study 1:
Yunnan/China

Ecosystem approaches to the better management of zoonotic emerging infectious diseases in the South East Asia Region

Case study 1: Yunnan, China

1. Identification of common research topic

Researchers from 4 different institutions with different locations, priorities and interests :

- Yunnan Agriculture University (Vet Fac)
- YAGAS, Yunnan Academy of Grasslands and An. Science
- Yunnan Endemic Disease Control and Prevention Institute (YEDCPI)
- Yunnan Animal Science and Veterinary Institute (ASVI)

Partners Interests and Expertise

Institute	Focus diseases	Expertise
Yunnan Endemic Disease Control and Prevention Institute (YEDCPI)	• Leptospirosis • Schistosomiasis japonica • Hantaviral diseases • Bartonellosis • Brucellosis, Toxoplasma	Detection, identification, and isolation of pathogens; Serological survey; DNA Sequencing, Lab tech., field epidemiology, pathogen ecology
Yunnan Animal Science and Veterinary Institute (ASVI)	• TB, Brucellosis • E. coli, salmonellosis	Diagnostic and monitoring methods, epidemiology, pathogen characterization, control and prevention, economic and public health impacts
Yunnan Agricultural University (YAU)	• Schistosomiasis japonica • toxoplasma • Hepatitis E., E. coli	Pathogen ecology, epidemiology, pathogenesis, prevention and control
Yunnan Academy of Grassland Animal Sciences (YAGAS)	• Fluke • Brucellosis, TB • Tape worm	Epidemiological investigation, clinical diagnosis, livestock genetics, production system, livestock ecology and management

Brucellosis & Toxoplasmosis in Yunnan

Approach (identification of research topic):

- Repeated meetings including stakeholders but also community visits, some with ILRI others not
- Timely process (nearly 12 months)
  - Feb 2009 to Jan 2010 (scoping visit of filed sites)

- Facilitation and consensus building skills needed
- Trust and relationship building takes time in China (some partners we had relations before, others not)
- Our choice was TB and Brucellosis
- Anyhow consensus on Toxoplasmosis & Brucellosis in ethnic groups

Eco ZD case study: Yunnan/China

Brucellosis and Toxoplasmosis, Yunnan, China

Related challenges (identification of research topic)

- Jan 2010, Scoping visit
  - to better understand the production system and socio-cultural aspects
  - Team surprised us with serological sampling in humans and animals. Purely biometric approach but still weak sampling protocol.
  - Research agreement was not even signed!
  - Philosophy: *sampling, sampling, sampling*
- Set back needed
  - First thoughts on recruitment of a national EH champion

Case study:
Brucellosis & Toxo in Yunnan

Problem:

- Brucellosis is a serious concern in Northern China
- Dairy sector promoted with animal movements from north to south
- No or limited information on prevalence's
- Toxoplasma: Lack of any update information in animal sector and PH concern

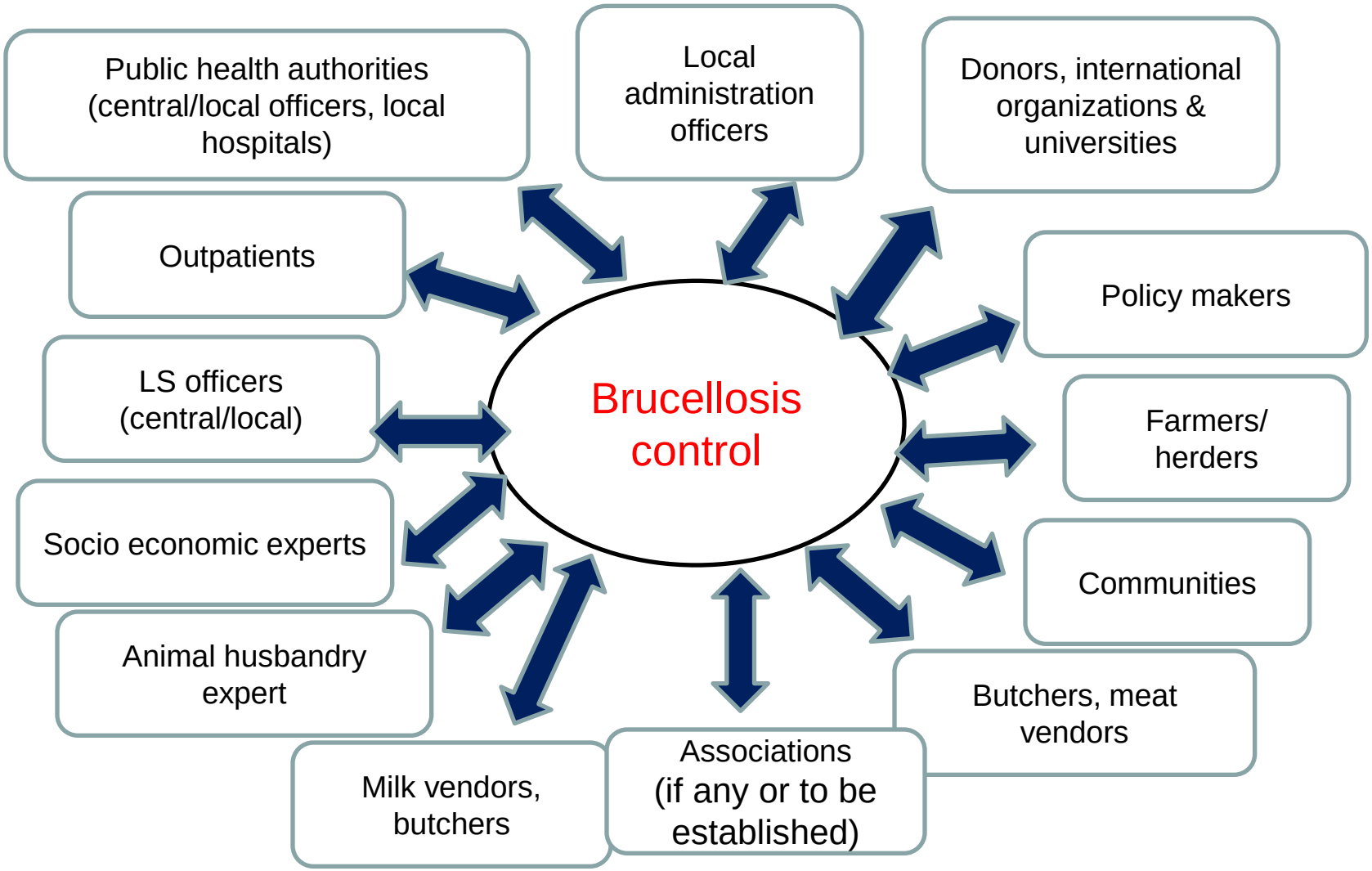
No studies on perception/awareness of involved groups and stakeholders

Classical vet approach (demanded by most tam members):

- Prevalence study in targeted livestock populations

Developing of an EH framework

Mapping of stakeholders, partners & groups involved

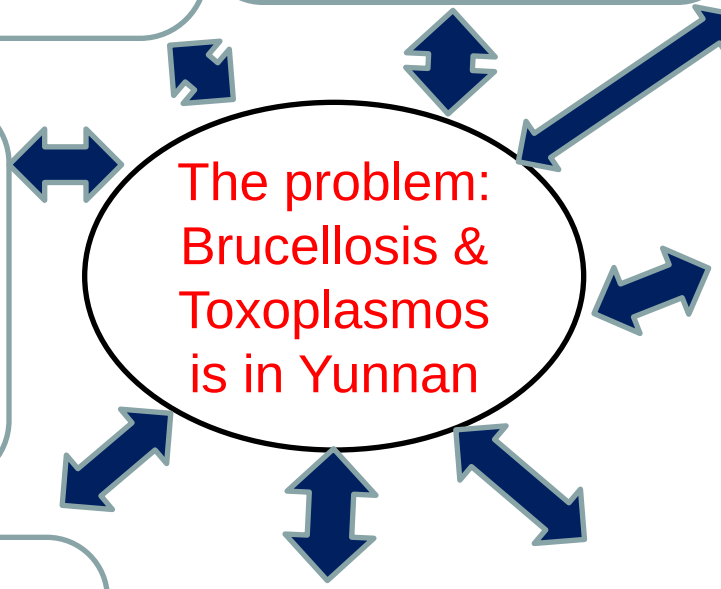


EH (study) framework for Yunnan study

Public health authorities (hospitals and local) (IDI)
- Review of existing information
- General Z knowledge
- Specific action B & T patients
- Collaboration with PH

Survey:
- Dairy farms (milk)
- People at risk (serum)

Farmers (QX)
- Production data
- AH and disease prevention
- Reproductive disorders
- Zoonoses and OH
- Waste management



Vet officers/stations (IDI)
- Review of existing information
- General Z knowledge
- Specific action B & T
- Control
- Collaboration with PH

Villagers (with/without livestock) (FGD)
- Animal husbandry
- Zoonoses
- Risk factors
- AH services
- PH services
- Source of information

Past unit, milk vendors (FGD):
- Zoonoses knowledge
- Quality control
- Sanitation
- Inspection by authorities

Hospital case review:
- Clinical cases

Literature review

Butchers (IDI)
- General Z knowledge
- Specific knowledge B & Toxo
- Health check and status
- Hygiene and training
- Waste management

Brucellosis & Toxoplasmosis in Yunnan

2. No experience with an EH approach

- Strong silo-thinking and biometric driven research team
- Continued demand for biological sampling
- No thoughts on qualitative methods
  - Very limited understanding of qualitative tools or socio-cultural aspects despite the study focus on ethnic minorities
- Limited understand of EH principles

<u>Approach:</u>

Frequent visit of ILRI scientist

Identification of an EH champion (Fang Jing)

Short training on EH (probably too late)

Relationship and trust building

Gain ownership by local authorities

Brucellosis & Toxoplasmosis in Yunnan
Qualitative research

3. Perception on qualitative research tools

- Some team members had perception that qualitative research is not valid, not scientific and therefore not useful
- Mainly more dominant in senior staff (vets of MD's)
- Often related to the fact that epidemiological sample size calculations used for quantitative tools may not apply the same way as for qualitative research
- Younger researchers more open but often challenged by hierarchical issues

- If than used (qualitative tools) there was a perception from again more senior researchers that they can do it themselves **(more like "everybody can do this")**

FGD and in depth interviews
We know how to do it ...

FGD in the commercial dairy cattle farm and the village, Yiliang, April 2012

Brucellosis & Toxoplasmosis in Yunnan
Perception on qualitative tools

Approach: Frequent visits of ILRI scientist

EH champion (Fang Jing)

Training modules on qualitative tools including

Relationship and trust building

Learning by doing - success:

After being trained and implementation, most of team members were exited on the use of FGD and IDI

Mainly driven by the collected data

» new views, they would never had thought about it

» Opportunity for triangulations …

New challenge emerged

Brucellosis & Toxoplasmosis in Yunnan

4. Synthesising qualitative and quantitative research results

- Focus was on collection and analysis of biological samples and quantitative data
- No experience with qualitative data analysis at all
- Latest now team members realised that “everybody can do it “ without some training might be wrong

Approach: First part of analysis strongly guided/done by EH champion e.g. In depth interviews in village doctors

Further analysis done jointly (IDI, butchers)

All others done by team (IDI, village Vets) and FGD

Brucellosis & Toxoplasmosis in Yunnan

Synthesising qualitative and quantitative research results

	QX Vet	QX PH	Butcher QX	Linkages to Serology	Triangulation FGD	Triangulation IDD	Potential RF Toxo/Bruc	Quality of QX data	Select for analysis	Comments
General data										
training, number of staff	x	x	x							
General Z knowledge										
Knowledge	x	x	x							
Most important Z	x	x	x							
Surveilance and control	x	x	x							
Bruc and Toxo (awareness, perception)										
Knowledge	x	x	x							
Diagnostic tests	x	x								
Handling of patient with B/T		x								
Collaboration with vet sector										
when	x	x								
which topic	x	x								
action	x	x								
General hygiene										
place for slaughter			x							
hygienic measured			x							
protecive clothes			x							
Health status and check			x							

Brucellosis & Toxoplasmosis in Yunnan

4. Synthesising qualitative and quantitative research results

	FGD	IDI	QX	Check list
Demographic (e.g. gender/ethnics)		Gender, differed by actor		
Knowledge on zoonoses		Lowest in butchers	Lowest in butchers	
Risk practices	Some raw milk and meat consumption in some villagers	No indications of raw m/m consumption	No indications of raw m/m consumption	NA
System services (vets)				

Brucellosis & Toxoplasmosis in Yunnan

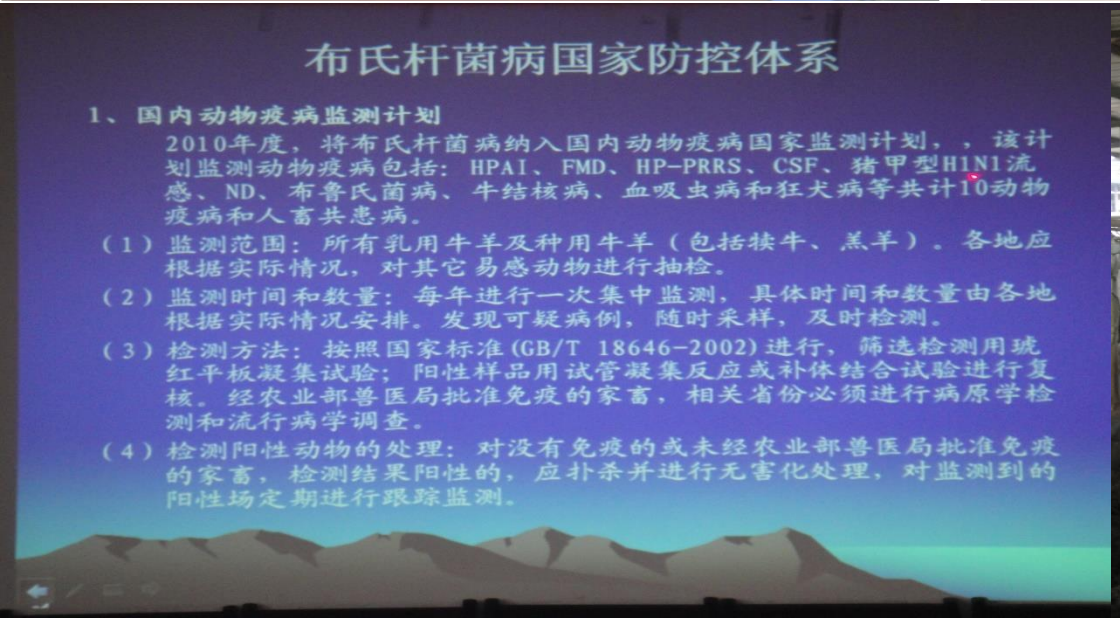
Other challenges and observations:

- Hierarchical differences between researchers
- Unfortunately the most “EH open” researcher was the youngest and also facing EN language difficulties
- Deficits in report/paper writing (mainly due to language barriers)
- Existing publications (mainly in Chinese)
- Team highly motivated but tendency to derail in direction
- Transaction costs (to facilitate various meetings)
- True Co-funding provided (25%, the only team among 8)

Challenges

FGD understanding and language barriers

FGD in the commercial dairy cattle farm and the village, Yiliang, April 2012



Case study 1: Brucellosis and Toxoplasmose in Yunnan

Final reflections: - finally one of the best and highly motivated team

- Incentive: invited by FAO to Beijing to present results

- Extended networking (e.g. EHRC and PE)

Case study 2:

Optimizing Rabies Control in Bali: An Ecohealth Approach.”

Case study 2:
Optimizing Rabies Control in Bali: An Ecohealth Approach."

Selection of study topic and teams

- ILRI facilitated a call for proposals for EH case studies

(4 proposals submitted)

  - Rabies in Bali
  - AI in humans and animals (Java)
  - Small holder chicken – a socio economic perspective for HPAI (Yogyakarta)
  - Toxoplasmosis in animals and human (Yogyakarta)

External panel evaluated each proposal

  - ILRI, NARS Indonesia, FAO, EH champions

Case study 2:
Optimizing Rabies Control in Bali: An Ecohealth Approach."

The problem:

- Rabies is an emerging zoonoses since its recent introduction
- Conventional control measures show limited success
- Prominent role of dogs in Bali society
  - Initial mass culling (Strychnine) faced strong obligations (local and international)
  - Obligations against population control measures

Classical vet approach:

Vaccination in dogs and sterilisation

Case studies 2:
Optimizing Rabies Control in Bali: An Ecohealth Approach

Eco Health perspective:

Better understand:

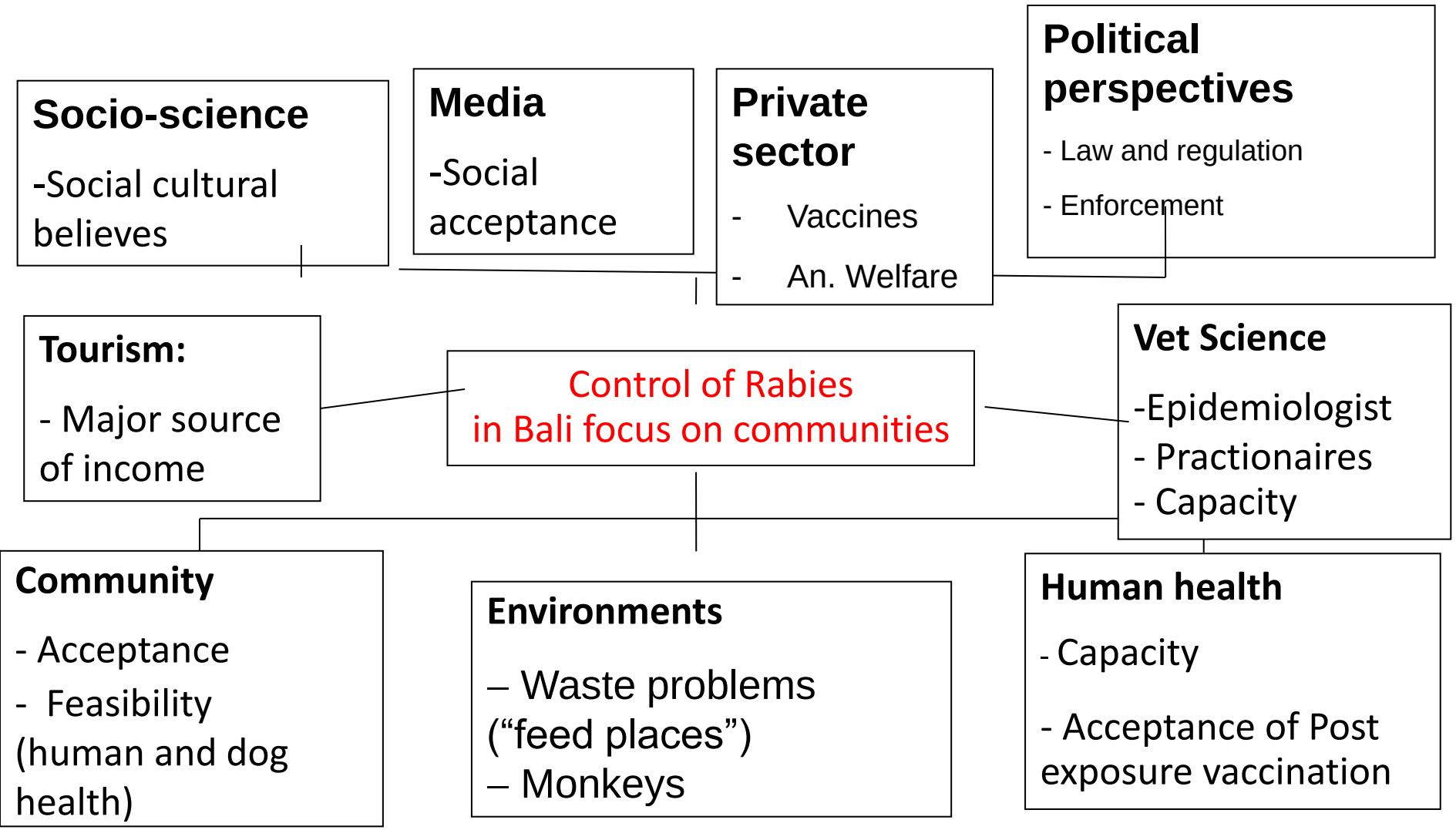
- Social cultural relationship between dogs and the Balinese community
- Dog population in Bali and its dynamics.
- Dog ecology in Bali and measure its contact intensity with other animals and human.

To develop a model for sustainable Rabies prevention, control, and eradication at *banjar* level through community empowerment and behavior change.

Aligned with Vaccination campaigns in dogs (FAO, LS services)

EH (study) framework

Optimizing Rabies Control in Bali



Ecohealth Approach

Review

Dog ecology Study (Behavior, Fecundity and Demography of Dog)

Social Culture Study

Dissemination:

Pilot Village (*A community-based approach*) **+**

Awareness in Elementary School

System Thinking (ecohealth principle (EP) #1)

Knowledge to Action (EP # 2)(Governor of Bali)

Trans-diciplinary Approach (EP# 3), e.g. research from various backgrounds

Participation (EP # 4)

Equity (EP # 5), e.g. male more responsibly in dog raising

Sustainability(EP# 6) e.g. village cadre's traind

Case study:
Optimizing Rabies Control in Bali: An Ecohealth Approach."

Challenges and approached to address them

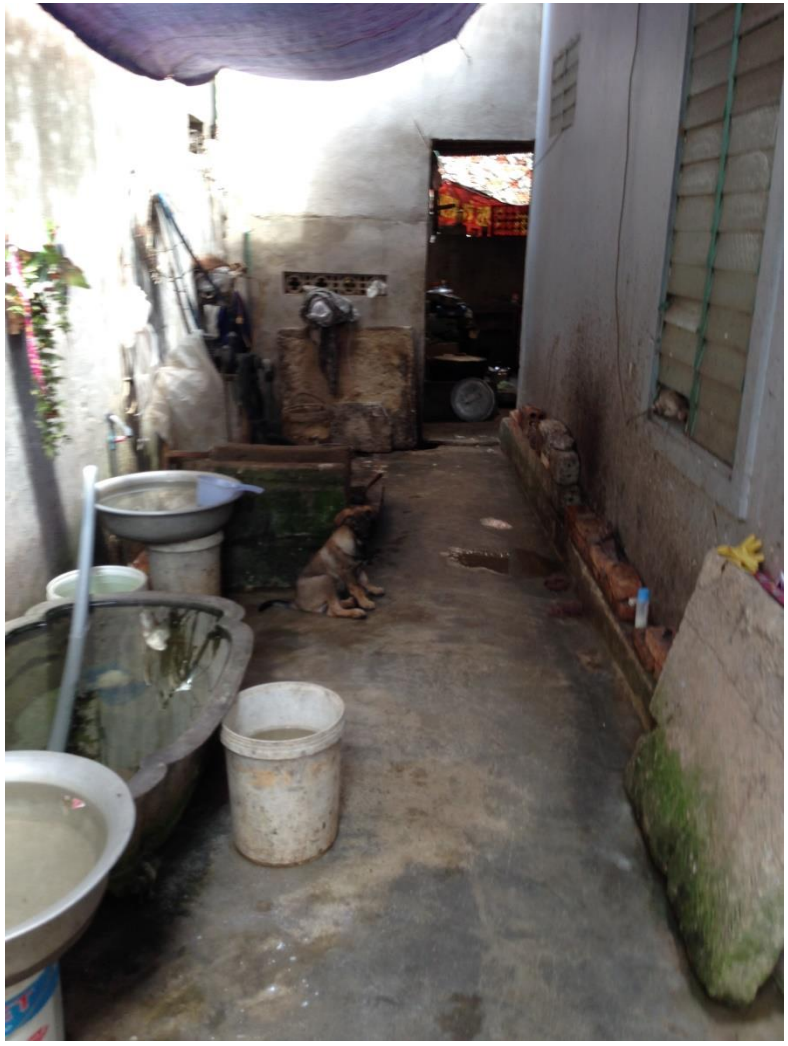
- Socio-cultural study – mainly based on qualitative approaches
  - International consultant from University of Edinburgh
  - PHD student from local partner
- Publication issues
  - Who publishes what in a transdisciplinary team
  - Publications demanded for almost all team members
  - Use of double lead authorships - some journals support this

Final reflection

- Scientifically strong team members of various backgrounds
- Most of them EH experienced from other IDRC studies

Case study 3:

Salmonella spp. IN PIG SLAUGHTERHOUSES AND PORK MARKETS ASSOCIATED WITH HUMAN HEALTH IN HUNG – PIG RISK



Scase study 3: Salmonella spp. IN PIG SLAUGHTERHOUSES AND PORK MARKETS ASSOCIATED WITH HUMAN HEALTH IN HUNG

Quantitative research

- Assess Salmonella contamination
- Determine potential risk factors

- Biological sampling
- Semi-structure QX
- Check lists

Quantitative research

- people's and stakeholders perception related to *Salmonella* contamination with the potential risks in practice

- People's living around slaughter houses (IDI)
- Pork consumers (IDI)
- Community vets
- Community health workers (IDI)
- SH workers (FGD)
- Pork sellers (FGD)
- Local authorities, party committee (IDI)

Case study 3: Challenges & approaches

- Convince participants on acceptance of FGD and IDI
  - Each takes 30-40 min
  - Most difficult in pork sellers and people living around SH

Approach: Repeated approach to convince for participation incentive

- Designing of outlines
  - FGD and IDI looked more like a long questionnaire
- Huge amount of collected information
  - 35-40 pages of transcript from FGD and IDI

Approach: Got help from a national social-scientist

MSC student (a vet) was smart and proactive

FGD initial outline People living around SH

Introduction: Group introduction
Reason why we are here
Self-introduction: I am ---, this is ----
2. Basic information about the respondents your family?
3. Animal husbandry
Raise pigs or not and for how long?
Some information about keeping pigs in villages, who have animals/pig
Reason to kept pig or not kept (any complain/disturbance)
4. Perception and Awareness about the slaughterhouse:
- Pork provided for community from where?
From SH, butcher, market or supermarket or other
- The presence of SH in the community?
What and how do you know about it/them?
Expected: Where, how far, how long, owner, time of slaughter, number of pig, how they transport…
- The affect of the SH:
List and ranking (using proportional pilling) and discuss why
Benefits (pork access, job, others...)
Disadvantages/disturbances (noise, environmental pollution, risk of diseases, house prices, any others ...)
Reflect/complain by the respondents, if any
If yes to whom (community, local government, slaughter house ...)?
What are the complains?
What should be changed?
Food safety and hygiene: (quarantine, disinfection, cleaning, housing…)?
Vet service: inspection?
Environment: waste, smell
Any reaction or change of situation, and what is the response/measure
Is it getting better or worst
- People's perception about standard criteria to be applied in the SH:
- List of criteria about the ‘standard’ SH from your perspective
- The slaughterhouse you described satisfied or not, how a future SH should be,
what should be done?
- Why should they change?
- If the meat price will increase due to investment towards a improved slaughterhouse, are they willing to pay, how much higher can be accepted?

Case study 3: Pig risk
Exiting results from focus groups discussions in pork sellers

1. Prefer to use **wood surface tables i**n stead of other types(e.g. versus stainless steel)
- Vietnam government currently upgrades markets (LIFSAP)
- Most of food sellers still use their old cutting boards

2. Use of **cloth to dry pork**, clean equipment, hand or table, some consumers related "wet" looking meat to low meat quality

3. **Use of cupboard** at market stools, same reason as under 2

4. **Use of mask**s: in response to buyers/consumers perception that sellers may have a health problem.

5. Knowledge of zoonoses: PRRS and FMD, CSF, leptospirosis, cysticercosis, misperception on FMD, CSF

Results of FGD help a lot to understand used practices not in the line with regulations

Case study 4:
LAO LONG-TERM STUDY ON ZOONOTIC DISEASES OF LIVESTOCK WITH A FOCUS ON PARASITIC DISEASES

The problem

- Parasitic zoonoses are often neglected disease and endemic in the Laos
- Some characteristics of animal production and food consumption habits in Laos, can promote zoonotic disease transmission
  - high density of both human and animal populations in close proximity;
  - a smallholder production systems with mixed species and little/no biosecurity;
  - abattoirs and wet markets operating with rudimentary hygiene,
  - widespread consumption of raw/undercooked blood, meat, fish, organ tissues, raw leaf vegetables…
  - Use of untreated wastewater and sewage for agriculture

Case study 4:
LAO LONG-TERM STUDY ON ZOONOTIC DISEASES OF LIVESTOCK WITH A FOCUS ON PARASITIC DISEASES

Objectives

- To provide an overview on parasitic zoonoses from secondary data
- To identify parasitic zoonosis distribution for prioritized parasites in animals and humans (southern part of Laos).
- Better understand farmers ' KAP' linked to parasitic zoonoses along the pigs and fish commodity chains.
- Improve animal health/productivity by a better knowledge on diseases drivers, and suitable control options related to: AH, PH & well-being
- Reduce animal and human health risks cf. food borne diseases through a better understanding of risk factors
- Develop a cross-sectoral collaboration platform and dissemination strategy

Case study 4:
LAO LONG-TERM STUDY ON ZOONOTIC DISEASES OF LIVESTOCK WITH A FOCUS ON PARASITIC DISEASES

- Team members include expertise from different backgrounds and expertise
  - Animal science, public health, social science

Strat up challenges:

- Identification of the research topic
  - Concerns that this is too broad
  - Disease focus, rather tendency to narrow it down from the begin to a specific disease e.g. by livestock species or specific disease/parasitoses
  - Consensus to focus on zoonotic endoparasites/helminthes

Case study 4:
LAO LONG-TERM STUDY ON ZOONOTIC DISEASES OF LIVESTOCK WITH A FOCUS ON PARASITIC DISEASES

Start up challenges:

- Research objectives, activities and expected outputs sometimes disconnected
  - Objectives and related activities had the tendency to be narrowed in terms of groups and actors involved e.g. only farmers initially involved
  - Synthesis component from various activities missing
- Strong preference on the use of biometric approaches
  - Biological sampling (serological) for specific diseases and focus on prevalence estimates
  - Expressed repeatedly by team members in various meetings/ discussions
- Limited understanding of EH principles

Case study 4:

LAO LONG-TERM STUDY ON ZOONOTIC DISEASES OF LIVESTOCK WITH A FOCUS ON PARASITIC DISEASES

Objectives		Activities	
1.		1.1	
		1.2	
		1.3	
		1.4	
2.		2.1	
		2.2	
		2.3	
		2.4	
3.		3.1	
		3.2	
		3.3	
		3.4	

Case study 4:

LAO LONG-TERM STUDY ON ZOONOTIC DISEASES OF LIVESTOCK WITH A FOCUS ON PARASITIC DISEASES

Objective	Activities	Transdiciplinary research	participation	Gender and equity	system-thinking	sustainability	research-to-action
1.	1.1						
	1.2						
	1.3						
	1.4						
2.	2.1						
	2.2						
	2.3						
	2.4						
3	3.1						
	3.2						
	3.3						
	3.4						

Case study 4:

LAO LONG-TERM STUDY ON ZOONOTIC DISEASES OF LIVESTOCK WITH A FOCUS ON PARASITIC DISEASES

EcoHealth principle	Characteristics	How to do this in practice (Activities)	Challenges	How to overcome the challenge?	Required support by the coordination unit
Transdisciplinary research					
Participation					
Equity & Gender					
System-thinking					
Sustainability					
Research-to-action					

Final reflections & conclusions

- Identification of a common research interest can be challenging
  - sometimes “painful” and time consuming, strong consultative process needed
- Junior versus senior
- Language barriers
- Silo thinking prominent in biometric dominated research teams
  - Strong focus on biological sampling
- Social science vs. biometric science background
  - Social science involvement remained a constant challenge
  - Qualitative vs. quantitative research
  - Synthesis of research results often the biggest challenge

Final reflections & conclusions

- Allocate sufficient time to expected changes of teams operations
- Trust building & incentives
- Identify & engage potential EH champions
- Continued mentoring on how to best incorporate EH in the proposals, field work and analysis
  - Balanced use of external & national experts
- Develop and use an evaluation system
- EH stories should be developed and documented
- Easier to achieve early success with partners already experienced in EH e.g. Indonesia. More difficult but perhaps more significant, with teams with no previous exposure to multi-disciplinary approaches (e.g. China)

Final reflections & conclusions

- Two-dimensional capacity-building requirement
  - Technical (proposal writing/implementation/methodological)
  - EHRC concept
- Sharing of credits for publications in a multidisciplinary team
- Policy engagement
- Sustainability

Final reflections & conclusions

- Flexible adaptive/consultative approach needed
- Reflections from Outcome mapping (Layer 1)
  - *Teams demanded a combined approach:*

  Strong demand for "leaning by doing" case studies but additional capacity building on EH through training and mentoring needed

Special thanks to the former EcoZD team and its partners
In particular: Jeff Gilbert, Delia Grace, Hung Nguyen

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